

Professional Course Examination (Odd), 2023

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : BCA/5/CC/25

(**Software Engineering—I**)

(Revised)

Full Marks : 75

Time : 3 hours

*The figures in the margin indicate full marks for the questions***(PART : A—OBJECTIVE)**

(Marks : 25)

SECTION—I

(Marks : 15)

I. Tick (✓) the correct answer in the brackets provided :**1×10=10****1. As the reliability increases, failure intensity**

(a) decreases ()

(b) has no effect ()

(c) increases ()

(d) None of the above ()

2. Which one of the following is not a category of software metrics?

(a) Product metrics ()

(b) Process ()

(c) Project metrics ()

(d) People metrics ()

3. The most desirable form of coupling is

(a) control coupling ()

(b) data coupling ()

(c) external coupling ()

(d) stamp coupling ()

4. SRS document is for

(a) 'what' of a system ()

(b) how to design the system ()

(c) costing and scheduling of a system ()

(d) system's requirement ()

5. Software consists of

(a) set of instructions + operating system ()

(b) programs + documentation + operating procedures ()

(c) programs + hardware manuals ()

(d) set of programs ()

6. Which one of the following is not a category of maintenance?
- (a) Corrective maintenance ()
 - (b) Adaptive maintenance ()
 - (c) Effective maintenance ()
 - (d) Perfective maintenance ()
7. In COCOMO model, if project size is typically 2-50 KLOC, then which mode is to be selected?
- (a) Embedded ()
 - (b) Semi-detached ()
 - (c) Organic ()
 - (d) None of the above ()
8. Context diagram explains
- (a) the overview of the system ()
 - (b) the internal view of the system ()
 - (c) the entities of the system ()
 - (d) None of the above ()
9. The worst type of cohesion is
- (a) temporal cohesion ()
 - (b) logical cohesion ()
 - (c) functional cohesion ()
 - (d) coincidental cohesion ()

10. If limited user participation is available, then which model is to be chosen?

- (a) Waterfall model ()
- (b) Spiral model ()
- (c) Iterative enhancement model ()
- (d) Any of the above ()

II. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

1. A good design will have low coupling and high cohesion.
(T / F)
2. The Rapid Application Development (RAD) model is a type of evolutionary process model.
(T / F)
3. A failure is the defect in a program that, when executed under particular conditions, causes a fault.
(T / F)
4. The two-schema architecture can be used to explain data independence.
(T / F)
5. The degree of a relationship is the number of entity types that participate in that relationship.
(T / F)

SECTION—II

(Marks : 10)

III. Answer the following questions :

2×5=10

1. (a) Discuss two reasons why it is difficult to improve the software process.

OR

- (b) Briefly explain the four sectors of major activities into which each phase of the spiral model is split.

2. (a) Differentiate between functional and non-functional requirements.

OR

- (b) Differentiate between enduring requirements and volatile requirements.

3. (a) Bring out the relationship between cohesion and coupling.

OR

- (b) Distinguish between top-down and bottom-up design approaches.

4. (a) Define data structure metrics. How can we calculate the amount of data in a program?

OR

- (b) What do you understand by models in software planning? Bring out the difference between static and dynamic models.

5. (a) Distinguish between alpha and beta testing.

OR

- (b) Differentiate between corrective maintenance and adaptive maintenance.

(PART : B—DESCRIPTIVE)

(Marks : 50)

IV. Answer the following questions :

10×5=50

1. (a) How are increment process models different from evolutionary process models? Discuss the prototyping model of software development. **2+4=6**

- (b) Make a list of the different myths associated with software development. Bring out how these myths affect the software process. **2+2=4**

OR

- (c) Write a note on the different areas of software applications. **5**

- (d) List the relative advantages and disadvantages of using waterfall model instead of ad hoc build and fix model. **5**

2. (a) Explain the importance of requirements and requirement engineering in the software development process. What are the problems in the formulation of requirements? **3+3=6**

- (b) Discuss the Use Case approach of requirement elicitation. **4**

OR

- (c) Explain the different steps in the requirements review process with the help of a suitable diagram. **5**

- (d) Differentiate between level-0 DFD and level-1 DFD with the help of suitable examples. **5**

3. (a) Discuss the different types of cohesion. **6**

- (b) What is modularity? List the important properties of a modular system. **1+3=4**

OR

- (c) Explain the concepts of abstraction, polymorphism and inheritance with regards to object-oriented design. **2+2+2=6**

- (d) Why is design important? Write a short note on the objectives of design. **2+2=4**

4. (a) Discuss various modes of COCOMO basic model. 4
(b) Explain the two size estimation techniques. 6

OR

- (c) Write a note on the top five risk factors that threaten software projects in different applications. 5
(d) Define software metrics. Discuss information flow metrics. 2+3=5
5. (a) Explain structural testing. Highlight its differences from that of functional testing. 3+2=5
(b) Discuss the various phases of the maintenance process. 5

OR

- (c) What is software reliability? How is it different from hardware reliability? 1+3=4
(b) Explain the three traditional levels of testing. 6
